Lacey Rotary Club

February 15, 2007

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Office of River Protection

Office of River Protection

CH2MHILL Hanford Group, Inc.

Bechtel National, Inc.

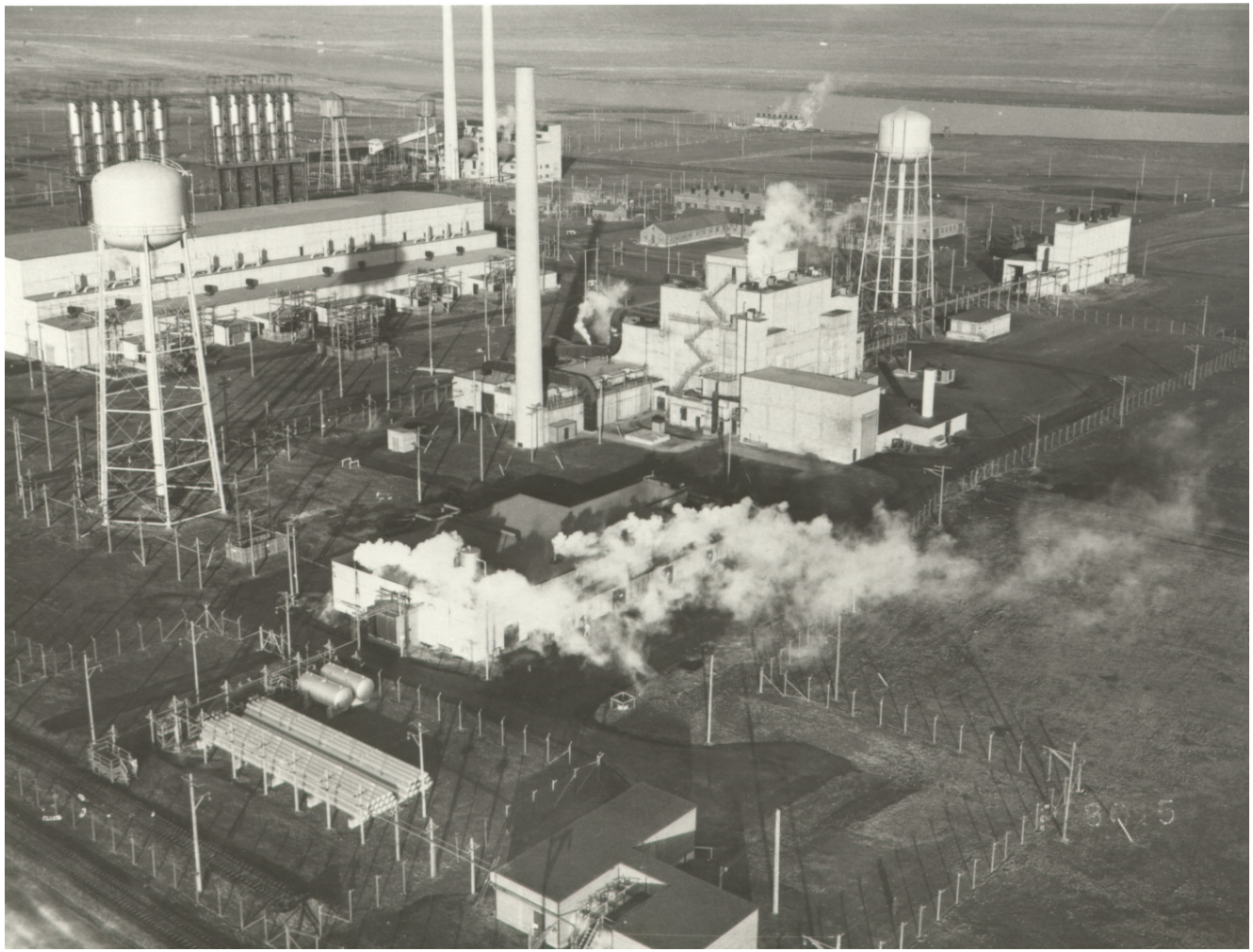
Washington Group International

EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

Hanford's B Reactor, as it stood in 1945

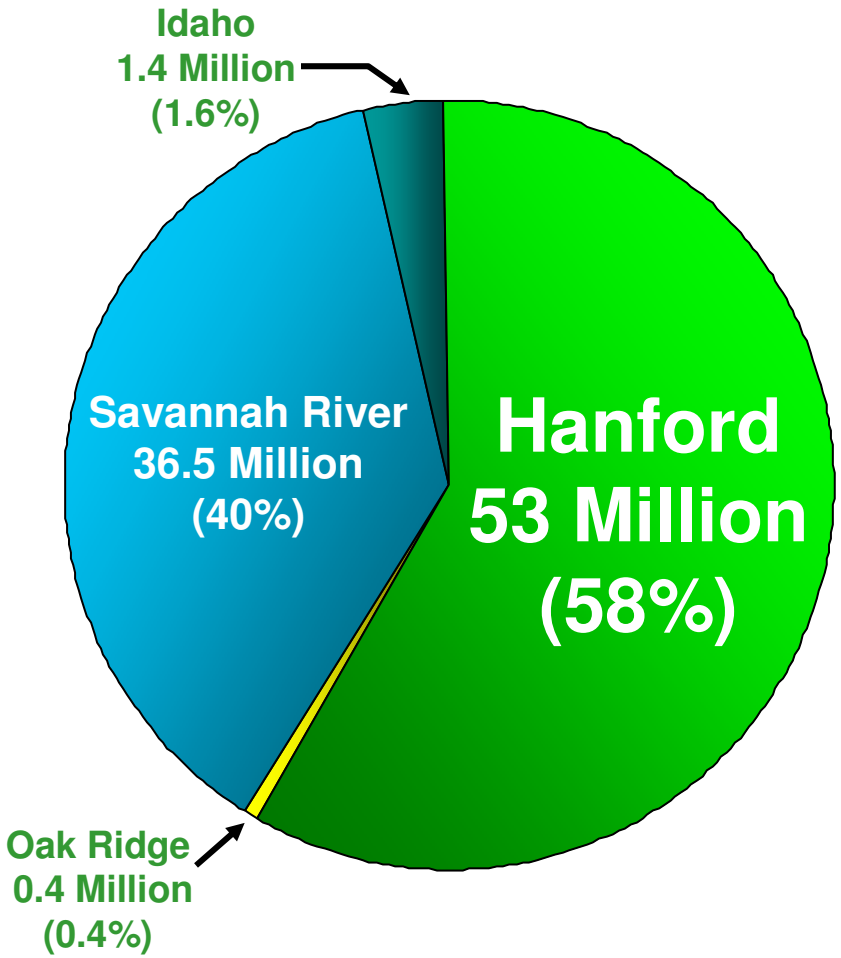


Hanford Tank Waste Cleanup Challenge

Hanford has:

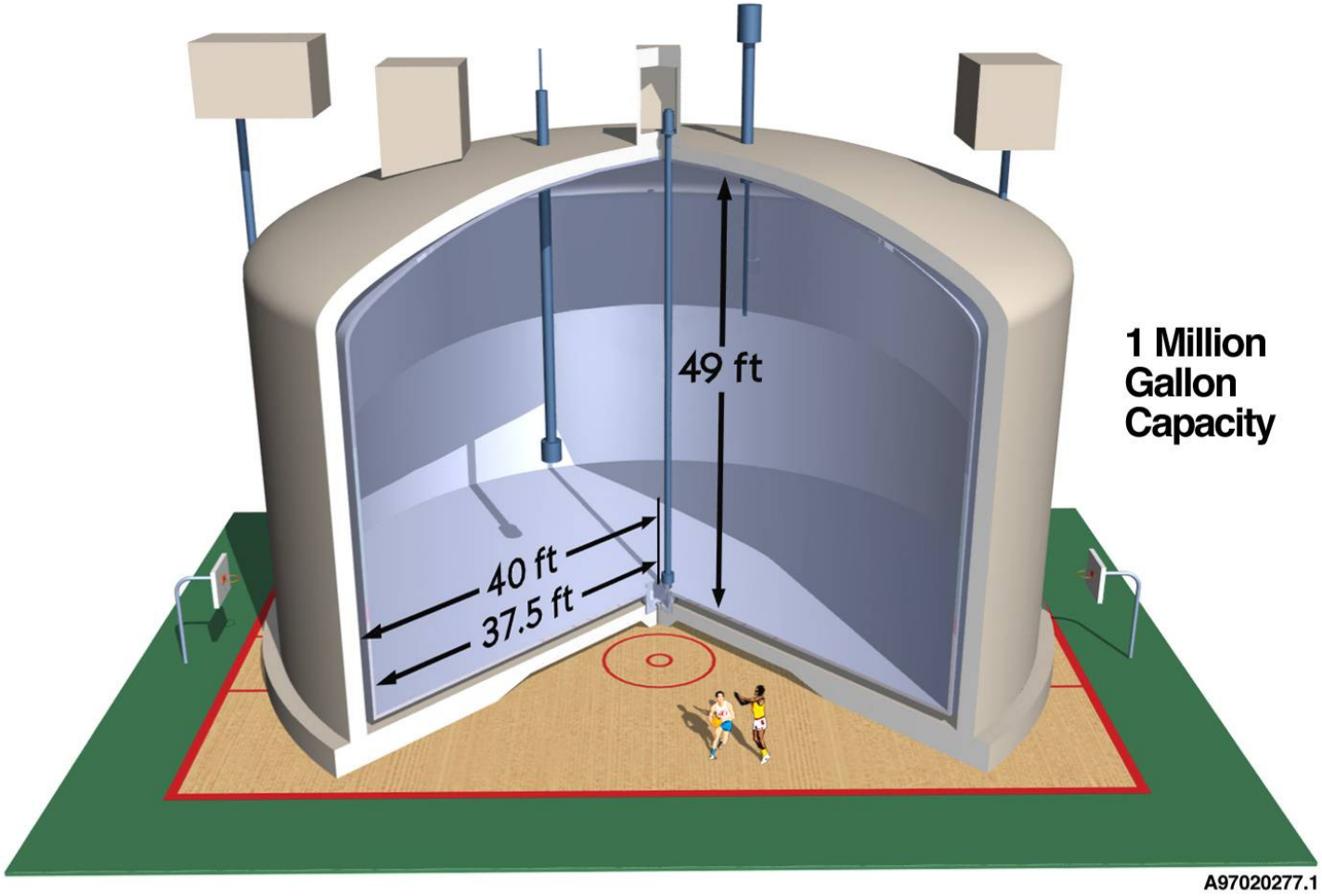
- 63% of DOE tanks; 80% of DOE single-shell tanks
- 58% of DOE total tank waste
- ~194 million curies of radioactivity in tanks (148 million already removed)
- ~190,000 tons of chemicals

Total Number of Gallons in Waste Tanks at DOE Sites:

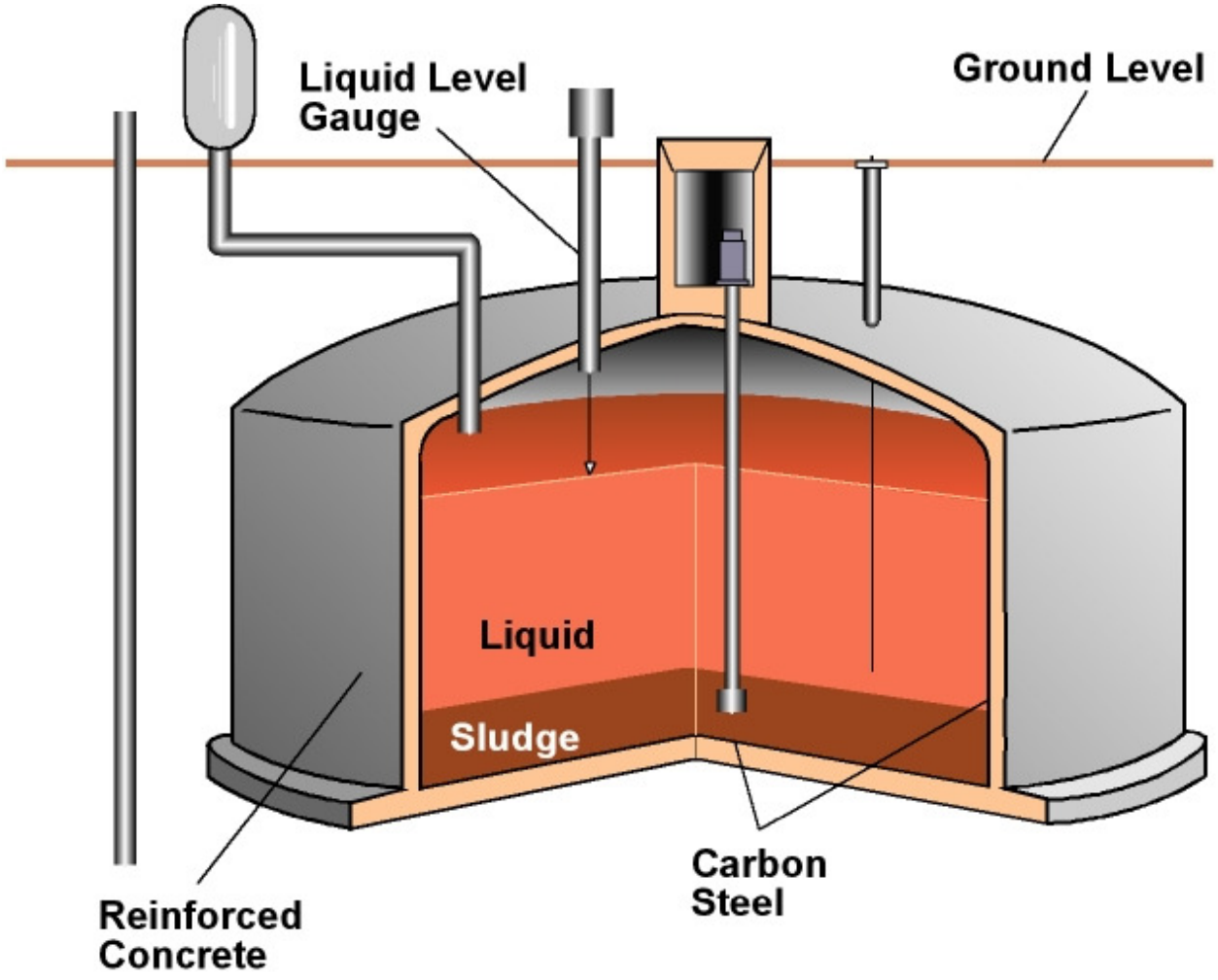


Double-Shell Tanks under construction

Double-Shell Tank

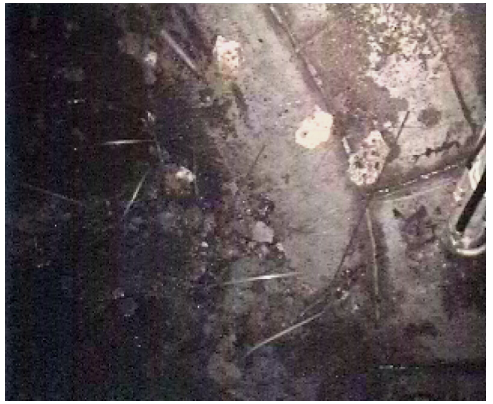


Single-Shell Tank

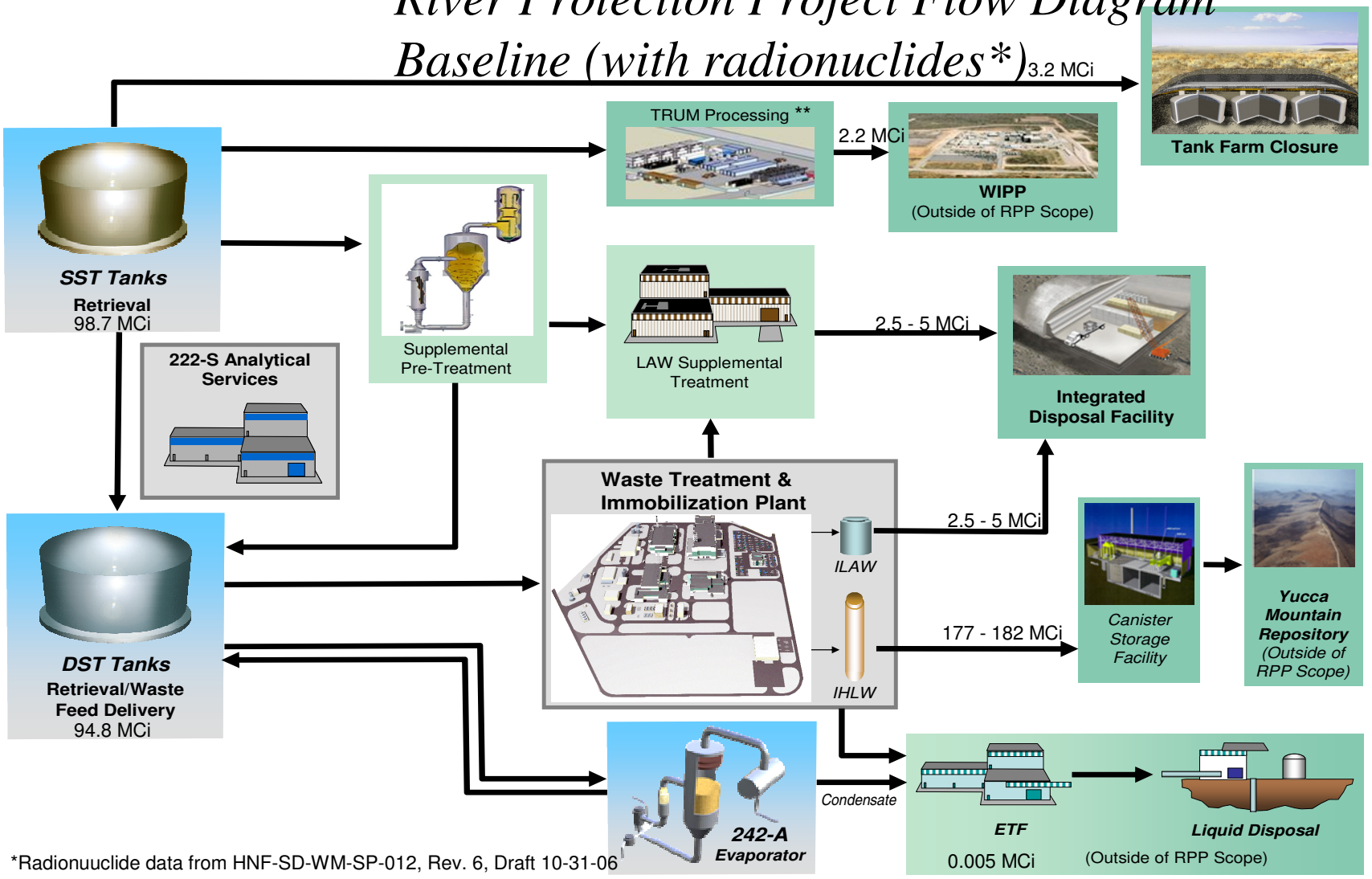


Safety is Office of River Protection's (ORP) Highest Priority

- Immediate Safety Risk Reduction
  - Interim Stabilized Tanks
  - Tank Retrievals
- Conservative Facility Design – Design Requires Defense in Depth
  - Elimination of Hazards Preferred
  - Engineered Safety Feature Preferred if Hazards cannot be Eliminated
  - Administrative Controls
  - Personnel Protective Equipment
- Highly Skilled, Trained and Experienced ORP and Contractor Staff
- Safety is Effectively Integrated into All Programs and Process through Integrated Safety Management



River Protection Project Flow Diagram
Baseline (with radionuclides*)



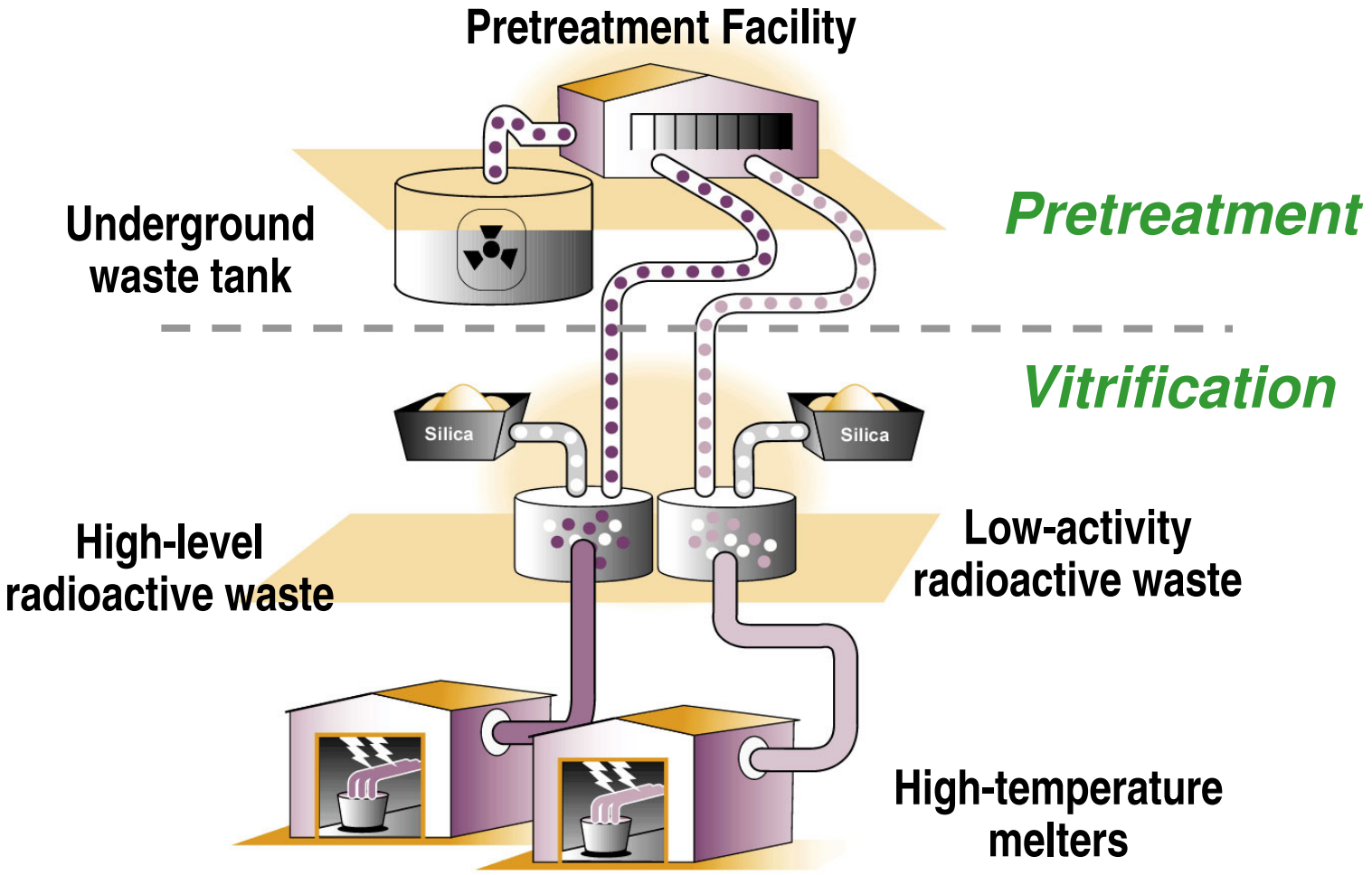
*Radionuuclide data from HNF-SD-WM-SP-012, Rev. 6, Draft 10-31-06

**A decision for disposal at the Waste Isolation Pilot Plant (WIPP) will not be made until (1) the waste meets the WIPP Waste Acceptance Criteria, with special emphasis on the waste determination as delineated in the WIPP recertification decision by the US EPA in March 2006; and (2) it meets the regulatory eligibility requirements for disposal as described in the WIPP Hazardous Waste Facility Permit.

Status of the River Protection Mission

- Waste Treatment Plant (WTP) Construction
  - Construction 30% complete
  - Design 70% complete
- Additional Low-Activity Waste Treatment Capacity
  - Designing and Testing Bulk Vitrification
- Tank Retrieval and Closure Activities
  - Six tanks retrieved to date
  - Three tanks in retrieval
  - Two tanks are being outfitted for retrieval
  - New retrieval technologies are working
- Integrated Disposal Facility
  - Construction completed
- Soil Contamination from Past Leaks
  - Characterizing extent of contamination
  - Implementing remedial actions

Waste Treatment Process

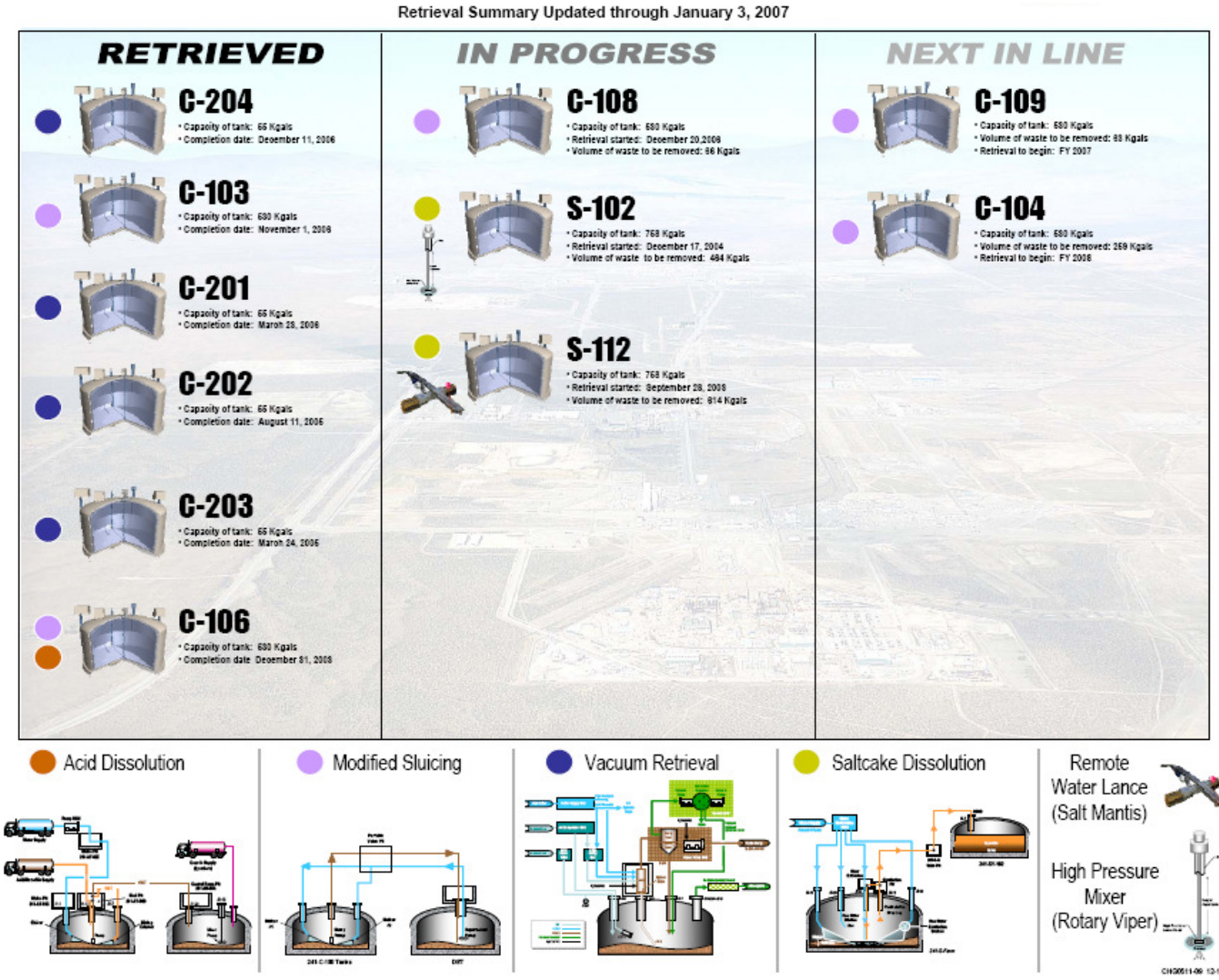


How is the Vitrified Waste Stored?

- High Level Waste Canisters
  - 2’ x 14.5’
  - 6,600 pounds of glass
  - Temporarily stored in Hanford’s Canister Storage Building until national repository built
- Low Activity Waste Containers
  - 4’ x 7.5’
  - 13,000 pounds of glass
  - Stored at Hanford’s Central Plateau

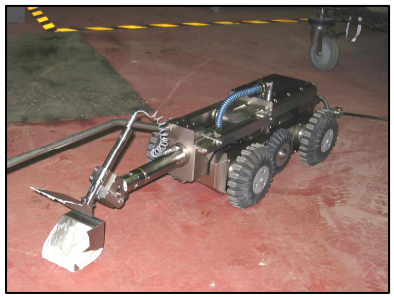
WTP Facilities

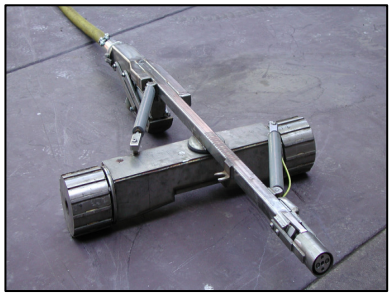
Hanford Tank Cleanup Status

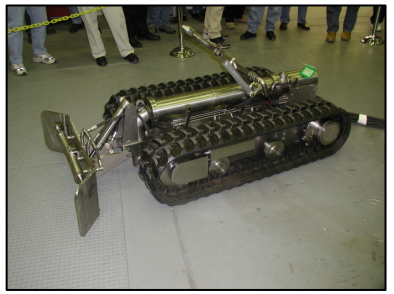


New Innovative Tank Waste Retrieval Technologies

- Technologies based on waste characteristics and each tank's physical condition
- Demonstrating achievability of 99% waste retrieval
- Working with State of Washington and Nuclear Regulatory Commission on retrieval effectiveness
- Managing available Double-Shell tank space



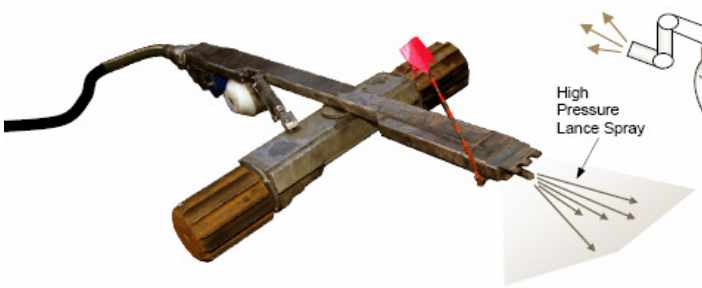




New Innovative Tank Waste Retrieval Technologies

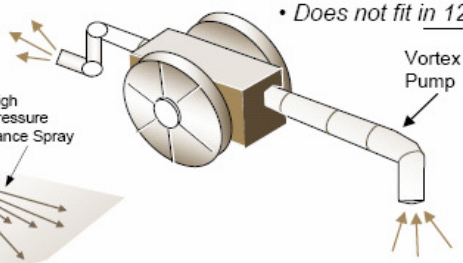
Salt Mantis: Waste Breakup and Mixing Tool

- *High pressure spray breaks up and mixes waste*
- *Augments other retrieval systems*



Aardvark: Waste Breakup and Transfer Tool

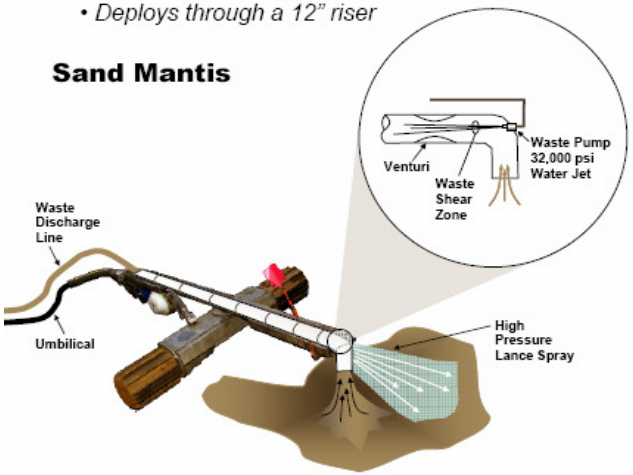
- *Developed for mining industry*
- *Pumps material with Vortex Pump*
- *Does not fit in 12" riser*



Sand Mantis: Waste Breakup, Mixing, and Transfer Tool

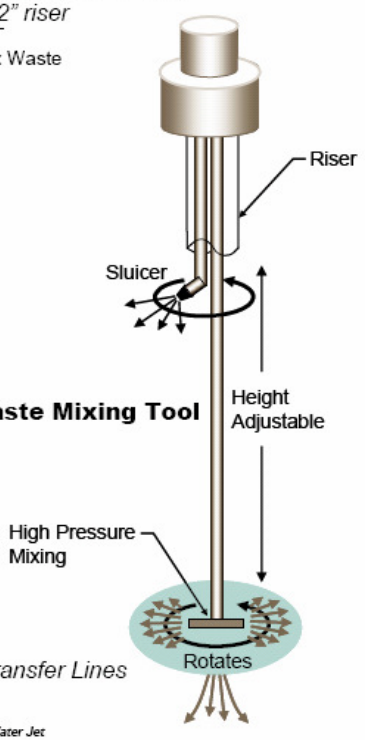
- *Waste transfer capability added to "Salt Mantis"*
- *Deploys through a 12" riser*

Sand Mantis



Rotary Viper: Waste Mixing Tool

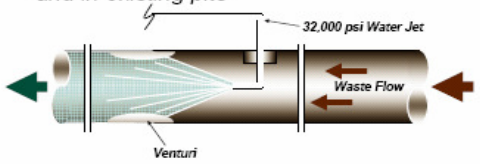
- *Sluicer*
- *Mixes Waste*
- *Fits down 4" Riser*



Squid Pump:

In-Line Waste Transfer Tool

- *Small size allows installation of Transfer Lines and in existing pits*



CHG0606-19.4

Bulk Vitrification (BV) Technology Demonstration Program

- Results to date indicate that BV glass is comparable to WTP ILAW
- Allows treatment flexibility in treating difficult waste streams
- Secondary waste is minimized and recycled within the process or sent to Effluent Treatment Facility (no orphan waste streams)
- Independent Expert Review Panel Demonstration Bulk Vitrification System review completed
- May allow LAW treatment prior to WTP startup

Path Forward for Fiscal Year 2007

- Continue Single-Shell Tank retrievals
- Work on resolution of the WTP technical issues
- Continue with Low-Activity Waste Vitrification, Laboratory, and Balance of Facility Design and Construction
- Completing Pretreatment and High-Level Waste Vitrification design
- Prepare for construction restart on the Pretreatment and High-Level Waste Vitrification facilities
- Continue evaluating Bulk Vitrification for supplemental Low-Activity Waste treatment